National Institute on Aging Intramural Research Program Johns Hopkins Bayview campus Biomedical Research Center, room. 04B118 Baltimore. MD

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May Baydoun*

Date and place of birth

8/8/1972

Beirut, Lebanon

Education

1975–1989 Collège Louise Wegmann, Beirut, Lebanon

1989–1990 Collège Protestant Français, Beirut, Lebanon

French Baccalaureate Degree

1990–1993 American University of Beirut, Beirut, Lebanon

B.S. in Biology

1993–1995 American University of Beirut, Beirut, Lebanon

B.S. in Nutrition & Dietetics

1996–1998 American University of Beirut, Beirut, Lebanon

M.P.H. in Epidemiology & Biostatistics

2002–2006 University of North Carolina at Chapel Hill NC, U.S.A.

PhD in Epidemiology: Dissertation title: Omega-3 fatty acids, hypertension and risk of cognitive decline among older adults in the Atherosclerosis Risk in Communities (ARIC)

study. Graduated: August 9th, 2006.

Languages English, Arabic and French

Work experience

November 1995-June 1996 Hotel-Dieu de France HospitalBeirut, Lebanon

Dietitian

Traineeship at this hospital and at the Military hospital to develop a proposal for improving the hospital's dietary department.

October 1996-June 1998 Social Development Training Center Beirut, Lebanon

Residency for MPH program in Epidemiology

Produced a report on the training needs of social workers and other professionals in health and research fields.

^{*} Nickname in most publications: Beydoun M. A.

July 1998-February 2001 American University of Beirut, Beirut, Lebanon

Research Assistant

Faculty of Health Sciences, Department of Epidemiology and Biostatistics, Supervisor: Abla Sibai, PhD. Two years full-time, 6 months part-time.

EEC and WHO-funded projects. Co-authored on a number of peer-reviewed articles and report Chapters. Assisted in the teaching of Epidemiology methods courses and advised groups of medical and health sciences students on statistical analysis and write-up of reports and dissertations.

June, 2000-June 2002 United Nations, ESCWA Beirut, Lebanon

Consultant (7 months) and Fixed-term Research Assistant (~1.5 years)

As a consultant: prepared five 100 pages booklets on Women and Men in Arab countries (Syria, Algeria, Tunisia, Lebanon and Yemen)

As fixed term RA: prepared the 5th issue of the "Compendium of Social Statistics in the ESCWA region" and a wall chart on "the Quality of Life in the ESCWA region". Also assisted in the write up of two pamphlets entitled: "Women and Men in Arab Countries: Employment" and "Women and Men in Arab Countries: Education". Finally, helped develop a labor statistics database. Supervisor: Ahmed Hussein, Social Statistics Section, Statistics Division, UN-ESCWA.

<u>August, 2002-August 2005</u> Carolina Population Center, UNC-Chapel Hill, NC, USA Predoctoral Trainee

2002-2003: Preceptor: Prof. Barry Popkin, Department of Nutrition. Analyzed China and Nutrition Health Survey data and prepared manuscript to be published in the Journal Social Science and Medicine. Attended PAA in Boston.

2004-2005: Preceptor: Dr. Jay S. Kaufman, Department of Epidemiology. Submitted R-03 grant to National Institute on Aging to fund dissertation work (not scored). Worked on several population-relevant publications. Attended PAA in Philadelphia and Los Angeles.

Spring, 2005, Fall 2005 and Spring, 2006: Department of Epidemiology NC, USA Teaching Assistant

Assisting in teaching introductory course in Epidemiological Methods (EPID 160). Instructors: Victor Schoenbach and Lorraine Alexander. Gave lectures twice a week and assisted students individually and in groups. Two semesters (Spring 2005 and 2006).

Part-time Assistant for EPID 269 (Analysis of Binary Data; Instructor: Jay S. Kaufman), duties included assisting students with STATA programming. One semester.

<u>June, 2006 – December, 2007</u>: Center for Human Nutrition, Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

Postdoctoral Fellow

Worked on (eg, data analysis and manuscript preparation) several projects including a USDA-funded 4-year study to examine the influence of environmental and socio-economic factors on diet intake and dietary quality of adults as well as the trends in obesity and dietary intake using data collected from large nationally representative surveys. Attended and presented research findings in one conference per year. Assisted in developing a NIH research grant; and worked as a teaching assistant in an Advanced Nutrition Epidemiology course. Attended courses during school terms that would improve methodologies applied in the research. Supervisor: Youfa Wang, MD, PhD.

<u>December, 2007 –</u>: Laboratory of Personality and Cognition, Intramural Research Program, National Institute on Aging, National Institutes of Health, Baltimore, MD.

Staff Scientist

Contribute to ongoing cross-sectional and longitudinal research. The cognition section has a multifaceted research portfolio that includes several long-term studies on the risks and correlates of age-associated changes in cognitive performance, functional abilities, and health status. The staff scientist is expected to collaborate with Cognition Section investigators and investigators in the Intramural Research Program on the risks and correlates of age-associated changes in cognitive function and dementia, health status and risks associated with health disparities related to race and socioeconomic status, and genetic, psychological, physiological and environmental markers for changes in cognitive performance and health-related outcomes. The staff scientist will provide substantive and methodological support with expertise in areas such as longitudinal and multiple outcome data analysis of complex patterns of repeated measures, missing data and informative censoring, and statistical genetics using techniques such as mixed-effects regression and time-dependent survival analysis. Supervisor: Alan Zonderman, PhD, NIA/NIH/IRP, Laboratory for Personality and Cognition.

Research support and grants

Active or Pending:

US Department of Agriculture (USDA) 2044-05322, JHU subcontract 2005-2009

Economic, Lifestyles, and Social Influences on Obesity

To study the influence of economic and environmental factors on people's lifestyle such as eating and physical activity behaviors and in turn how these factors may affect obesity using existing national survey data

Role: postdoctoral fellow (PI: Youfa Wang)

The Center for a Livable Future at the Johns Hopkins Bloomberg School of Public Health 2006-2007

Calcium Intake, Dairy Consumption, Health, and Environment

To study the worldwide trends in dairy production and people's dairy and calcium intake, their impacts on health and environment, and to develop sustainable evidence-based approaches and programs to help address the worldwide calcium intake inadequacy problem, especially in populations consuming plant-based diets.

Role: postdoctoral fellow (PI: Youfa Wang)

Title: "Resemblance between child & parental eating, physical activity & obesity patterns" Funding: NIH R03 grant (\$164,617, funded)

Objectives: The study aims to examine the resemblances between American children's and their parents' eating and physical activity patterns as well as their weight status and the influence of individual-, household-, and environmental- factors on the association.

Role: Co-I (PI: Youfa Wang)

Completed Research Support (over the last three years)

The Center for a Livable Future at the Johns Hopkins Bloomberg School of Public Health 2005-2006

Comparison of the Trends In People's Meat Consumption between Different Socioeconomic Groups In China and the United States and Their Impact On Obesity Role: postdoctoral fellow (PI: Youfa Wang)

Publications (published or in press):

- 1. **Beydoun M. A.** (2001). Marital Fertility in Lebanon: A study based on the population and housing survey. *Social Science & Medicine*, vol. 53 (6): 759-771.
- 2. Sibai A.M., Nuwayhid I., **Beydoun M.**, Chaaya M. (2002). Inadequacies of death certification in Beirut: who is responsible? *Bulletin of World Health Organization*, vol. 80(7): 555-561.
- 3. Sibai A.M., Zard C., Adra N., **Baydoun M.**, Baba N-H (2003). Variations in nutritional status of elderly men and women according to place of residence. *Gerontology*. 49(4):215-24.
- 4. Sibai A.M., Sen K., **Baydoun M.**, Saxena P. (2004). Population aging in Lebanon: current status, future prospects and policy implications. *Bulletin of World Health Organization*. 82:219-225.
- 5. **Beydoun M.A.**, Popkin B.M. (2005). The impact of socio-economic factors on functional status decline among community-dwelling older adults in China. *Social Science & Medicine* 60(9):2045-57.
- 6. **Beydoun M. A.**; Kaufman J. S.; Satia J. A.; Rosamond W.; Folsom A. R. (2007) Plasma n-3 fatty acids and risk of cognitive decline among older adults: The Atherosclerosis Risk in Communities (ARIC) study. *American Journal of Clinical Nutrition* 85:1103-11.
- 7. **Beydoun M. A.**; Kaufman J. S.; Ibrahim J.; Satia J. A.; Heiss, G. (2007) Measurement error adjustment in essential fatty acid intake from a food frequency questionnaire: Alternative approaches and methods. *BMC Medical Research Methodology* 2007; 7(1):41 (14 pages; open access).
- 8. Wang Y.; **Beydoun M.A.** (2007). The Obesity Epidemic in the United States: A Systematic Review and Meta-analysis: Gender, age, socioeconomic, ethnic, and geographic characteristics of obesity. *Epidemiologic Reviews* 29:6-28.
- 9. **Beydoun M. A.**; Kaufman J. S.; Sloane P. O.; Heiss G.; Ibrahim J. (2008) n-3 fatty acids, hypertension and risk of cognitive decline among older adults in the Atherosclerosis Risk in Communities (ARIC) study. *Public Health Nutrition* 11(1):17-29.
- 10. **Beydoun M. A.**; Wang Y. (2008) How do socio-economic status, perceived economic barriers and nutritional benefits affect quality of dietary intake among US adults? *European Journal of Clinical Nutrition* 62(3):303-13.
- 11. **Beydoun M. A.**; Wang Y. (2008) Do nutrition knowledge and beliefs modify the association of socio-economic factors and diet quality? *Preventive Medicine* 46:145-153.
- 12. **Beydoun M. A.**; Powell L.; Wang Y. (2008). Impacts of fast food, fruits and vegetables' prices on dietary intakes among US adults: Are they modified by family income? *Social Science & Medicine* 66: 2218-2229.
- 13. Chen X., **Beydoun M. A.**, Wang Y. (2008). Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity* 16(2):265-74.

- Beydoun H. A.; Beydoun M. A. (2008). Trends, disparities and major influences in colorectal cancer screening among older adults in the United States. Cancer Causes and Control 19(4):339-59.
- 15. **Beydoun M. A.**, Beydoun H. A., Wang Y. (2008). Obesity and central obesity as risk factors for incident dementia and its sub-types: A systematic review and meta-analysis. *Obesity Reviews* 9 (3): 204-218.
- 16. Beydoun M. A.; Gary TL; Caballero BH; Lawrence, RS; Cheskin L; Wang Y. (2008). Ethnic differences in dairy and related nutrient consumption among US adults and their association with obesity, central obesity and the metabolic syndrome. *American Journal of Clinical Nutrition* 87(6):1914-25.
- 17. **Beydoun M. A.**, Beason-Held LL. (2008). Does hypertension interact with body weight to impact cognitive function in the elderly? Emerging evidence. Comment in: *American Journal of Hypertension* 21(6):603.
- 18. Wang Y., **Beydoun M. A.**, Liang L, Caballero B, Kumanyika SK. Will all Americans become overweight or obese? When and at what cost? Estimating the progression and cost of the US obesity epidemic (2008). *Obesity* 16(10):2323-30.
- Beydoun M. A., Lhotsky A, Wang Y, Dal Forno G., An Y, Metter EJ, Ferrucci L, O'Brien R, Zonderman AB. (2008). Adiposity status and changes in early to midadulthood are associated with incidence of Alzheimer's disease. *American Journal of Epidemiology* 168(10):1179-89.
- 20. **Beydoun M. A.**; Wang Y.; Powell L. (2009). Reduced away-from-home food expenditure and belief in the importance of nutrition can improve quality of dietary intake among US adults. *Public Health Nutrition* 12(3):369-81.
- 21. Sibai A. M., **Beydoun M. A.**, Tohme R. A. (2009). Living arrangements of ever-married older Lebanese women: Factors behind co-residence with an adult child. *Journal of cross-cultural Gerontology* 24(1):5-17.
- 22. Beydoun M. A., Beydoun H. A., Wang Y. Author Reply (2009). Obesity Reviews.
- 23. **Beydoun M. A.**, Wang Y (2009). Gender- ethnic disparity in body mass index and waist circumference distribution shifts in US adults. *Obesity* 17(1):169-76.
- 24. Beydoun HA, **Beydoun M. A.**, Tamim H (2009). Does diagnosis with gestational diabetes mellitus influence post-partum contraception among non-diabetic primiparous women? *Contraception* 79(4):290-6.
- 25. Wang Y, **Beydoun MA** (2009). Meat consumption is associated with obesity and central obesity among US adults. *International Journal of Obesity* 33(6):621-8.
- 26. **Beydoun M. A.,** Wang Y (2009). Parent-child dietary intake and pattern resemblance in the United States: Evidence from a large representative survey. *Social Science & Medicine* 68(12):2137-44.
- 27. Beydoun HA, Stadtmauer L., **Beydoun MA**, Russell H., Zhao Y., Oeninger S (2009). Polycystic Ovary Syndrome, Body Mass Index and Outcomes of Assisted Reproductive Technologies. *RBM Online* 18(6):856-63.

- 28. **Beydoun MA**, Kuczmarski MF, Mason M, Evans M, Zonderman AB (2009). The role of depressive symptoms in explaining SES disparities in dietary quality and central adiposity among US adults: a structural equation modeling approach. *American Journal of Clinical Nutrition* 90:1084-95.
- 29. **Beydoun M. A.**, Wang Y (2010). Pathways linking depression to SES, lifestyle factors and obesity among US adults. *Journal of Affective Disorders* 123(1-3):52-63.
- 30. **Beydoun M. A.**, Kuczmarski MF, Beydoun HA, Shroff M, Mason M, Evans MK, Zonderman AB (2010). Plasma folate mediates the association of dietary quality with depressive symptoms only in men. (*Journal of Nutrition*) 140(2):338-47.
- 31. Dotson V.; **Beydoun MA**; Zonderman AB (2010). Recurrent depressive symptoms and its association with incidence of dementia and mild cognitive impairment: Baltimore Longitudinal Study on Aging. (*Neurology*). 75(1):27-34.
- 32. Beydoun HA; Al Sahab B.; **Beydoun MA**; Tamim H (2010). Intimate partner violence as risk factor for postpartum depression among Canadian women in the Maternity Experience Survey. (*Annals of Epidemiology*) 20(8):575-583.
- 33. **Beydoun MA**; Boueiz A; Shroff M; Beydoun HA; Wang Y; Zonderman AB (2010). Associations between 25-hydroxy-Vitamin D, dietary quality and metabolic disturbances differ by central obesity status among US adults. (*Journal of Clinical Endocrinology & Metabolism*) 95(8):3814-27.
- 34. Beydoun HA, **Beydoun MA**, Davis J, Lance R, Schellhammer P, Mohan R (2010). Development of a knowledge, understanding and judgment scale for treatment of localized prostate cancer (*British Journal of Urology*) (Epub).
- 35. Beydoun HA; Sicignano N., **Beydoun MA**; Russell H; Jones H., Oehninger S (2010). A cross-sectional evaluation of the first cohort of young adults conceived by in vitro fertilization in the United States. (*Fertility & Sterility*) (Epub).
- 36. Wang Y., **Beydoun M. A.**, Caballero B, Gary T. L., Lawrence R (2010). Time trends and correlates of American Adults' meat consumption patterns. (*Public Health Nutrition*) (Epub).
- 37. Beydoun HA, Dail J, Ugwu B, Boueiz A, **Beydoun MA** (2010). Socio-demographic and risk behavioral correlates of seroprevalence and co-infection with herpes simplex virus type 1 and 2 among adults (18-49 years) in the United States NHANES 1999-2004. (*International Journal of Infectious Diseases*) (Epub).
- 38. Beydoun HA; Sicignano N.; **Beydoun M. A.**; Bocca S.; Stadtmauer L.; Oehninger S (2010). Pubertal development of young adults conceived by in-vitro fertilization. (*Fertility & Sterility*) (Epub).
- 39. **Beydoun M. A.**, Wang Y (2010). Sociodemographic disparities in distribution shifts of adiposity measures among American children and adolescents. (*International Journal of Pediatric Obesity*). (Epub).

- 40. **Beydoun MA**, Boueiz A.; Abougergi M; Kitner-Triolo M; Beydoun HA; Resnick S. M.; O' Brien R.; Zonderman AB (2010). Sex differences in the association of the epsilon 4 allele of apolipoprotein E with dementia, cognitive impairment and decline in older US adults. (*Neurobiology of Aging*). (Epub).
- 41. **Beydoun M. A.**, Beason-Held LL, Kitner-Triolo M, Beydoun HA, Resnick S, Ferrucci L, Zonderman AB (2010). Statins and serum cholesterol's associations with incident dementia and mild cognitive impairment (*Journal of Epidemiology & Community Health*). (Epub)
- 42. Beydoun HA, Dail J, Tamim H, Ugwu B, **Beydoun MA**. Understanding gender and age disparities in *Chlamydia* infection among adults in the United States NHANES 1999-2004. (*Journal of Women's Health*) (Epub).
- 43. **Beydoun MA**, Kuczmarski MF, Wang Y, Mason M, Evans M, Zonderman AB. Receiver-operating characteristic analysis of adiposity indices for metabolic risk factors and the metabolic syndrome: the HANDLS study. (*Public Health Nutrition*). (Epub)
- 44. **Beydoun MA**; Shroff M. R.; Beydoun H. A.; Zonderman A. B. Serum folate, B-12 and homocysteine and their association with depressive symptoms among US adults. (*Psychosomatic Medicine*). (Epub)
- 45. Wang Y., **Beydoun M. A.**, Li Ji; Luis A. Moreno (2010). Do children and their parents eat a similar diet? The association between children's and parents' dietary intakes. (*Journal of Epidemiology and Community Health*). (In press).
- 46. Beydoun HA, Tamim H, Lincoln AM, Dooley SD, **Beydoun MA** (2010). Association of physical violence by an intimate partner around pregnancy with inadequate gestational weight gain in the Oklahoma Pregnancy Risk Assessment Monitoring System (*Social Science & Medicine*). (In press)
- 47. Mohan R.; Beydoun H. A.; Barnes-Ely M.; **Beydoun M. A.**; Lance R.; Schellhammer P. Self-rated health as a tool for estimating health-adjusted life expectancy among patients newly diagnosed with localized prostate cancer: A cross-sectional study. (*Quality of Life Research*). (In press)
- 48. **Beydoun MA**; Powell LM; Chen X; Wang Y. Associations of food prices with dietary quality, fast food consumption, and body mass index among US children and adolescents. (*Journal of Nutrition*). (In press)

Manuscript under review:

49. Driscoll I; **Beydoun MA**; An Y; Zonderman AB; Ferrucci L; Resnick SM. Relationship between mid-life obesity and brain volume trajectories among older adults. (*Human brain mapping*).

Selected workshops and conferences:

1) Workshops:

Summer 1999: WHO burden of disease project in Lebanon workshop.

September 2005: SAMSI program on Latent Variables in Social Sciences (LVSS).

March 2008: MPLUS 2-day course on Statistical analysis with Latent Variables.

April 2010: Longitudinal data analysis with Stata, Washington, DC (Instructor: Paul D. Allison).

2) Conferences:

April 2003: Population Association of America meeting in Boston, MA.

April 2004: Population Association of America meeting in Philadelphia, PA.

April 2005: Population Association of America meeting in Los Angeles, CA.

May 2007: Experimental Biology, Washington, DC.

June 2007: USDA Human Nutrition and Obesity conference, Washington, DC.

April 2008: Experimental Biology, San Diego, CA.

June 2009: Society for Epidemiologic Research (SER), Anaheim, CA.

April 2010: Experimental Biology, Anaheim, CA.

3) Invited seminars, posters and presentations:

March, 2006: Omega-3 fatty acids, hypertension and risk of cognitive decline among older adults in the Atherosclerosis Risk in Communities (ARIC) study; Center for Human Nutrition, Department of International Health, Johns Hopkins School of Public Health.

December, 2006: Impacts of SES, away-from home food expenditure, food price barriers and nutrition beliefs on diet quality among US adults: a complex framework; Center for Human Nutrition, Department of International Health, Johns Hopkins School of Public Health.

May, 2007: How do socio-economic status, perceived economic barriers and nutritional benefits affect quality of dietary intake among US adults? Poster presentation at Experimental Biology (FASEB) meeting, Washington, DC. Abstract published in the *FASEB* journal 2007;21:834.8.

June, 2007: **Economic, Lifestyle and Social Influences on Obesity.** Annual Project Directors Workshop USDA/CSREES NRI Human Nutrition and Obesity Washington, DC -- June 26-28, 2007. Oral presentation along with Dr. Lisa Powell, University of Illinois at Chicago.

June, 2007: How do socio-economic, demographic, psychosocial and environmental factors interact to affect dietary intake and quality among American adults? 3rd Annual Postdoctoral poster competition, Johns Hopkins Bloomberg School of Public Health, June 30th.

November 2007: Ethnic differences in dairy and related nutrient consumption among US adults and their association with obesity, central obesity and the metabolic syndrome. Postdoctoral seminar series, Johns Hopkins Bloomberg School of Public Health.

April 2008: Ethnic differences in dairy and related nutrient consumption among US adults and their association with obesity, central obesity and the metabolic syndrome. Experimental Biology (FASEB) meeting, San Diego, CA, oral presentation, first author. Abstract published in FASEB journal 2008; 22:316.6

April 2008: **Will all Americans become overweight or obese? Obesity prevalence and health care cost projections.** Experimental Biology (FASEB) meeting, San Diego, CA, oral presentation, second author. Abstract published in *FASEB journal* 2008;22:295.1.

April 2008: The impacts of adiposity status and changes in early to mid-adulthood on incidence of Alzheimer's disease: BLSA. NIA/NIH/IRP annual scientific retreat, Maritime Institute on Technology, Linthicum Heights, Maryland. Poster presentation.

March 2009: Receiver-operating characteristic analysis of adiposity indices for metabolic risk factors and the metabolic syndrome: the HANDLS study. NIA/NIH/IRP annual scientific retreat, Maritime Institute on Technology, Linthicum Heights, Maryland. Poster presentation.

April 2009: Socio-demographic disparities in distribution shifts of adiposity measures among American children and adolescents. Experimental Biology, New Orleans, LA. Poster presentation.

June 2009: Receiver-operating characteristic analysis of adiposity indices for metabolic risk factors and the metabolic syndrome: the HANDLS study. Society for Epidemiologic Research annual meeting, Anaheim, CA. Poster presentation.

June 2009: The role of sex in the association of the epsilon 4 allele of apolipoprotein E with incidence of dementia and cognitive decline among older US adults. Society for Epidemiologic Research annual meeting, Anaheim, CA. Spotlight session oral presentation.

October 2009: Causal Inference in Epidemiology: DAGs, propensity scores and marginal structural models. Statistical Interest Group (SIG) lecture at the Biomedical Research Center, NIA/NIH/IRP.

October 2009: Ethnic differences in dairy consumption and its association with metabolic syndrome (MetSyn) among US adults: Multi-Ethnic Study of Atherosclerosis (MESA). NAASO, Poster session, Washington DC.

November 2009: **Associations between 25-hydroxy-Vitamin D, dietary quality and metabolic disturbances differ by central obesity status among US adults**. American Medical Association, Poster session, Houston, Texas.

April, 2010: Plasma folate's associations with depressive symptoms among US adults: the role of dietary intakes and diet quality. Experimental Biology, Oral Presentation, Anaheim, CA.

April, 2010: **Fish consumption,** *n***-3 fatty acids and depressive symptoms among US adults: HANDLS study.** SER, poster session, Seattle, WA.

Journal reviewer (In descending impact factor order):

Archives of Internal Medicine (IF~11); American Journal of Clinical Nutrition (IF~7); Obesity Reviews (IF~5.5); American Journal of Epidemiology (IF~5.4); Epidemiology (IF~5.4); Journal of Nutrition (IF~4); American Journal of Preventive Medicine (IF~3); Journal of Epidemiology and Community Health (IF~3); Journal of Affective Disorders (IF~3); Social Science and Medicine (IF~2.9); BMC Epidemiologic Perspectives & Innovations (IF~2); Social Forces (IF~2); Public Health Nutrition (IF~2).

Awards received:

October, 2001: Suad Al Subah Award for best scientific achievement for the year 2001. Alumni Association, American University of Beirut (award amount: \$4000).

October 2001: Mellon Middle East Fellowship for doctoral studies at UNC-CH with traineeship at the Carolina Population Center (Andrew Mellon Foundation and Middle East Awards). Full scholarship for academic year 2002-2003.

Fall, 2004: Compton Dissertation Award, through the Carolina Population Center.

<u>January, 2005</u>: Gordon H. Defriese Awards for Career Development in Aging Research for the year 2004; Institute on Aging, UNC-Chapel Hill. (award amount: \$3000).